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ABSTRACT

Designed to assess the ability of subjects to apply concrete operations to data in a reading format, and to determine if there is any difference with regard to type of paragraph or type of question, this test consists of four short paragraphs, each of which established one of the following operations: an additive classification, a multiplicative classification, an additive series, and a multiplicative series. Conformity for the paragraphs was insured in several ways, and the readability level measured at grade 4 by the Dale-Chall Readability Formula. The questions are divided into dichotomous categories: easy intension-based, easy extension-based, hard intention-based, and hard extension-based. [This document is one of those reviewed in The Research Instrument Project (TRIP) monograph "Measures for Research and Evaluation in the English Language Arts" to be published by the Committee on Research of the National Council of Teachers of English in cooperation with the ERIC Clearinghouse on Reading and Communication Skills. A TRIP review which precedes the document lists its category (Reading), title, author, date, and age range (primary, intermediate), and describes the instrument's purpose and physical characteristics.] (JM)

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The attached document contains one of the measures reviewed in the TRIP committee monograph titled:

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CS 201369

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Category: Reading

Title: Experimental Test of Piagetian Concrete Operations in a Reading Format

Author: Joseph C. Kretschmer

Age Range: Primary - Intermediate

Description of the Instrument:

Purpose - To assess 1) the ability of subjects to apply concrete operations (that according to Inhelder and Piaget (1964), and Piaget (1967) form the basis for child thought between ages 7 and 11) to data in a reading format, and 2) to determine if there is any difference with regard to type of paragraph (classificatory or serial, additive or multiplicative) or the type of question (easy or hard, intension-based or extension-based).

Date of Construction - 1972

Physical Description - The test consists of four short paragraphs. Each paragraph established one of the following operations: (1) an additive classification, (2) a multiplicative classification, (3) an additive series, (4) a multiplicative series. In order to insure conformity for the paragraphs, each paragraph is from 43 to 51 words in length; discusses relationships among a group of boys and girls; contains no words (except names) that were not on the Dale List of 3000 Familiar Words; has an average of 5.7 sentences with an average sentence length of 8.15 words. As measured by the Dale-Chall Readability Formula, the readability is at a grade four level.

The questions, like the paragraphs are divided into dichotomous categories, (1) easy intension-based, (2) easy extension-based, (3) hard intension-based, (4) hard extension-based. An item was judged easy depending on (a) the number of logical steps between assumptions in additive hierarchies, or (b) the number of properties or ordered difference scales in multiplicative hierarchies. A hard item was judged difficult by the same two criteria. Items that emphasize intension, present the properties (of a class) or the relation (of a series) in the stem of the question. Items that emphasize extension present or list the elements (objects or classes) of the class or series in the stem of the question.

The subjects are asked to read each story and then circle the best answer.

DIRECTIONS: Read each story, then circle the best answer.

I

I have five good friends. Bert lives right next door to me. Carol lives farther away than Bert. Jill lives even farther away than Carol. Dana lives farther away than Carol, but closer than Scott. I have to take a bus to his house.

1. Carol lives
   a) farther away than Jill and Bert.
   b) farther away than Dana and Jill.
   c) closer than Scott and Bert.
   d) closer than Bert and Jill.
   e) No answer is right.

2. Who lives farther away than Dana?
   a) Jill
   b) Bert
   c) Scott
   d) Carol
   e) No answer is right.

3. Who lives closest to me?
   a) Scott
   b) Jill
   c) Dana
   d) Bert
   e) No answer is right.

4. Carol
   a) lives closer than Dana.
   b) lives farther away than Jill.
   c) lives closer than Jill.
   d) lives farther away than Dana.
   e) No answer is right.

5. Dana lives farther away than
   a) Jill, Carol and Bert.
   b) Bert and Scott.
   c) Jill and Scott.
   d) Carol, Jill and Scott.
   e) No answer is right.

Validity, Reliability and Normative Data:

The instrument was administered to 60 third graders and 60 sixth graders in Columbus, Ohio elementary and middle schools. Third graders, as a group, averaged a 45 percent success level, and sixth graders averaged about 65 percent. The Horst Modification of the KR-20 reliability formula revealed coefficients of .736 for the third grade population, and .837 for the sixth grade population.

Related Documents:

Inhelder, B. and Piaget, J. The Early Growth of Logic in the Child, New York: The Norton Library, 1964.

Kretschmer, Joseph C. "Measuring Reading Comprehension", unpublished doctoral dissertation, The Ohio State University, 1972.

Kretschmer, Joseph C. "Measuring Reading Comprehension" (abstract), Reading Research Quarterly, Vol. IX, No. 2, 1974.

Kretschmer, Joseph C. "Toward a Piagetian Theory of Reading Comprehension", Reading World (in press).

Piaget, J. Six Psychological Studies, New York: Vintage Books, 1967.

Thorndike, E.L. "Reading as Reasoning: A Study of Mistakes in Paragraph Reading", Journal of Educational Psychology, 8, 1917.

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EXPERIMENTAL TEST OF PIAGETIAN

CONCRETE OPERATIONS IN A READING FORMAT

APPENDIX C: The Experimental Test--Form A

DIRECTIONS: Read each story, then circle the best answer.

I have five good friends. Bert lives right next door to me. Carol lives farther away than Bert. Jill lives even farther away than Carol. Dana lives farther away than Carol, but closer than Scott. I have to take a bus to his house.

1. Carol lives

   a) farther away than Jill and Bert.
   b) farther away than Dana and Jill.
   c) Closer than Scott and Bert.
   d) closer than Bert and Jill.
   e) No answer is right.

2. Who lives farther away than Dana?

   a) Jill
   b) Bert
   c) Scott
   d) Carol
   e) No answer is right.

3. Who lives closest to me?

   a) Scott
   b) Jill
   c) Dana
   d) Bert
   e) No answer is right.

4. Carol

   a) lives closer than Dana.
   b) lives farther away than Jill.
   c) lives closer than Jill.
   d) lives farther away than Dana.
   e) No answer is right.

5. Dana lives farther away than

   a) Jill, Carol and Bert.
   b) Bert and Scott.
   c) Jill and Scott.
   d) Carol, Jill and Scott.
   e) No answer is right.

6. Who lives farthest away from me?

a) Jill
b) Carol
c) Bert
d) Scott
e) No answer is right.

7. Who lives closer than Scott and Jill?

a) Dana and Carol
b) Carol and Bert
c) only Carol
d) only Bert
e) No answer is right.

II

John had two brothers who were both tall. Their names were Will and Fred. John's sister, who was short, was named Mary. John liked Fred better than either of the others. All these children except Will had red hair. He had brown hair.

1. Fred and Will

a) have brown hair.
b) are not John's brothers.
c) are tall.
d) have red hair.
e) No answer is right.

2. Who had red hair?

a) Will, Fred and John
b) John, Mary and Will
c) only Fred and John
d) Mary, John and Fred
e) No answer is right.

3. Who is John's brother, is short, and has brown hair.

a) Will
b) Fred and Will
c) John and Mary
d) Will, Fred and John
e) No answer is right.

4. Who is tall, is not John, and has red hair?
a) Fred and Mary
b) Fred
c) Will and Fred
d) Will
e) No answer is right.

5. Mary

a) is short, is not John's brother, and has red hair.
b) is tall, is not John's brother, and has brown hair.
c) is short, is John's sister, and has red hair.
d) is tall, is John's sister, and has red hair.
e) No answer is right.

6. John and Mary

a) have red hair.
b) have brown hair.
c) are tall.
d) are short
e) No answer is right.

7. Which children are not John's brothers?

a) Will and Mary
b) Fred and John
c) John and Mary
d) Will and Fred
e) No answer is right.

8. Will

a) is short, is John's brother, and has red hair.
b) is tall, is not John's brother, and has brown hair.
c) is short, is not John's brother, and has red hair.
d) is tall, is John's brother, and has brown hair.
e) No answer is right.

III

Betty, Brad, Dan, Greg and Karen go to Elm St. School. Greg is in the fifth grade, and the others are in fourth. All the fourth-graders like ice cream except Karen. Betty does not have a pet. The other fourth-graders who like ice cream to have pets. Dan has a dog.

1. Who likes ice cream?

a) Dan, Betty and Brad
b) Greg, Karen and Betty
c) Brad, Betty and Karen
d) Betty, Greg and Brad
e) No answer is right.

2. Who is not in the fourth grade?

a) Karen
b) Betty
c) Dan
d) Greg
e) No answer is right.

3. Who goes to Elm St. School?

a) only Karen, Brad, Betty and Greg
b) only Dan, Betty, Greg and Brad
c) Dan, Greg, Karen, Brad and Betty
d) everyone but Greg
e) No answer is right.

4. Betty, Dan and Brad

a) have pets.
b) are in the fifth grade.
c) like ice cream.
d) do not have pets.
e) No answer is right.

5. Brad

a) does not like ice cream.
b) is in the fourth grade.
c) has a pet cat.
d) does not go to Elm St. School.
e) No answer is right.

6. Betty and Brad

a) don't like ice cream.
b) have pets.
c) are not in the fourth grade.
d) do not have pets.
e) No answer is right.

7. Who is not in the fifth grade?

a) only Greg
b) only Karen
c) only Betty, Dan and Karen
d) only Dan, Betty, Karen and Brad
e) No answer is right.

8. Dan and Brad

a) are in the fourth grade.
b) do not have pets.
c) have dogs.
d) do not like ice cream.
e) No answer is right.

IV

There are nine boys on the Bears baseball team. Mark, Bill and Ed, are all taller than Henry or Dave or Bob. Jack, Ray and Al are the shortest. Henry, Jack and Mark run faster than Dave, Ray or Bill. Bob, Ed and Al are the slowest runners.

1. Who is slower and taller than Dave?

   a) Jack
   b) Henry
   c) Bill
   d) Ed
   e) No answer is right.

2. Bill is taller and faster than

   a) Ed and Mark.
   b) Henry and Dave.
   c) Bob and Al.
   d) Ray and Jack.
   e) No answer is right.

3. Ray runs faster than

   a) Mark and Henry.
   b) Jack, Dave and Mark.
   c) Henry and Jack.
   d) Bill.
   e) No answer is right.

4. Who is taller than Dave?

   a) Ed and Mark
   b) Bill and Al
   c) Mark and Al
   d) Ray and Bob
   e) No answer is right.

5. Jack is faster and shorter than

   a) Bill and Ed.
   b) Henry and Mark.
   c) Dave and Ray
   d) Al and Bob.
   e) No answer is right.

6. Who runs faster than Ray?

   a) Al and Jack
   b) Henry and Mark
   c) Mark and Dave
   d) Jack and Ed
   e) No answer is right.

7. Who is taller than Henry and faster than Ed?

   a) Dave and Bill
   b) Bill and Mark
   c) Bob and Bill
   d) Dave and Bob
   e) No answer is right.

8. Henry is taller than

a) Ed.
b) Al and Dave.
c) Jack.
d) Jack and Bob.
e) No answer is right.

This test was

a) harder than most tests I've taken.
b) easier than most tests I've taken.
c) about the same as most tests I've taken.